

# GROWN UP™ ...

## A Newsletter For Those Who Care For ADOLESCENTS, ADULTS AND AGING ADULTS

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© VIRAL HEPATITIS... YOUR RISK

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**Behavioral Objectives:** After reading this newsletter the learner will be able to:

1. Explain how the hepatitis virus interferes with the normal functions of the liver.
2. Compare the causes of and measures to prevent transmission of hepatitis A, B, and C.

To the layperson, "hepatitis" is a single disease. However, there are five types of viral hepatitis recognized by the Centers for Disease Control—A, B, C, D, & E, each caused by a different virus. Although there are various types of hepatitis, a person can have more than one type of hepatitis viral infection.

Viral hepatitis can be contracted through food contaminated with fecal material, as well as transmitted via blood and body fluids. All hepatitis viruses affect the liver and have the potential to cause similar symptoms, including jaundice, fatigue, abdominal pain, enlarged liver, anorexia, nausea, vomiting, diarrhea, dark urine, clay colored stools, and joint pain. Not everyone who contracts viral hepatitis will experience all, or even any, of those symptoms. In fact, many people are asymptomatic.

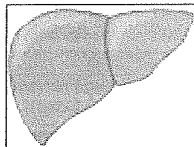
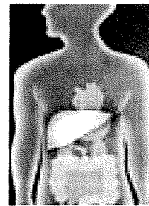
This newsletter will examine the pathophysiology of hepatitis. Transmission and prevention of the most common viral forms found in the United States, hepatitis A, B and C, will be discussed.

### **PATHOPHYSIOLOGY:**

The hepatitis virus attacks the liver, finding healthy liver cells and using them to reproduce itself. The liver is the only tissue known to be harmed by the viral infection.

Reproduction is the primary job of any virus - it lives to replicate. The hepatitis virus itself is a strand of ribonucleic acid (RNA) that is coated in protein. RNA is found in all body cell nuclei or centers and is used by healthy body cells to communicate instructions to other cells and substances to carry out normal body functions.

The hepatitis virus uses the healthy liver cells as food or energy to reproduce itself. As a result, the liver cells are unable to carry out their functions, including storing nutrients, sugars, fats, and vitamins, that the body needs to work. The ability to remove or neutralize poisons from the blood, such as alcohol and other poisons, is also compromised, as well as the ability to produce immune agents to combat infection, and remove germs and bacteria from the blood. Due to a decrease in function or cell death, the liver is also unable to make proteins that regulate blood clotting and produce bile to help absorb fats and fat-soluble vitamins. The blood is unable to flow correctly through the liver and is not properly cleaned by the liver cells. When liver cells die, they turn into fibroids or scars in the liver.



### **COMMON TYPES OF HEPATITIS**

#### **HEPATITIS A:**

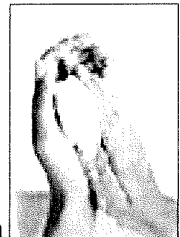
Hepatitis A (HAV), once known as infectious hepatitis, is transmitted when a person puts something in his or her mouth that's contaminated with fecal material (called "fecal-oral transmission").

Contaminated food is the most common cause and is the type of hepatitis resulting from mishandling of food in restaurants. Hepatitis A can occur in situations ranging from isolated cases of disease to widespread epidemics. One-third of all Americans have evidence of past infection with hepatitis A.

Symptoms of HAV usually occur after a 15- to 50-day incubation period, the time from exposure to the onset of symptoms. Patients are asymptomatic at this point, but can still spread the virus to others. Other than jaundice, symptoms are generally mild and flu-like, such as fatigue, anorexia, nausea, diarrhea, fever, and abdominal pain. The patient is rarely infectious once he or she develops jaundice. Late in the infectious process of HAV, the virus can also be found in the bile, blood, and stool. Infection with HAV is diagnosed when anti-HAV, the HAV antigen, is found in the blood. Nearly all those who contract HAV recover without treatment. The disease rarely progresses to acute liver necrosis or cirrhosis. Once a person's infected with HAV, he or she is immune for life.

The best protection against HAV transmission is prevention. Good

handwashing, after using the restroom or changing a diaper, as well as before preparing food or eating, is essential to prevent the spread of HAV. Using caution in



drinking water when traveling internationally, is also important. For example, developing countries, such as Mexico, have high rates of hepatitis A infection due to inadequate water sanitation.

A two-dose HAV vaccine is available. Short-term protection is available from immune globulin, which may be administered up to 2 weeks after coming in contact with HAV. This increases an individual's immunity for 6 to 8 weeks. Vaccination is also recommended for household members and those who have had sexual contact with the person exposed to HAV.

#### HEPATITIS B:

Previously known as serum hepatitis, hepatitis B is primarily a blood-borne disease. But blood isn't the only place the hepatitis B virus (HBV) is found. It's been isolated in every body fluid and tissue. HBV is transmitted when blood or body fluids from an infected person enter the broken skin or mucous membranes of someone who isn't immune to HBV.

An increased risk of acquiring HBV infection occurs as a result of having sexual contact with an HBV-infected person, having multiple sex partners, using illicit IV drugs, men having sex with other men, living in the same house with someone who has lifelong HBV infection and having a job that involves contact with human blood. Sharing toothbrushes, razor blades, or other personal items with an infected person may also lead to exposure. Shared needles and needle-stick exposure are other modes of transmission. An ever-increasing risk comes from improper disposal of used needles and syringes - more than 9% of them are contaminated with hepatitis B or C virus.

HBV attacks the liver and can cause lifelong infection, cirrhosis, liver cancer, liver failure, and even death. It's a major cause of cirrhosis and liver cancer.

Signs and symptoms of hepatitis B include jaundice, fatigue, abdominal pain from an enlarged liver, loss of appetite, nausea, vomiting, and joint pain. But, as with HAV infection, some patients, as many as 30%, won't exhibit any symptoms. About 90% of people with HBV develop antibodies to the virus and recover completely within 6 months.



The other 10% progress to chronic hepatitis or become carriers and will be infectious for the rest of their lives. An estimated 1.25 million Americans are chronically infected—about 20% to 30% from infection acquired in childhood.

One of the best preventive measures is the HBV vaccine. Children under the age of 18 are routinely vaccinated today. The number of new infections has decreased since the HBV vaccine was introduced. Individuals who are at risk for the virus, including health care workers, should be vaccinated.

#### HEPATITIS C:

Hepatitis C (HCV) was known previously as non-A, non-B hepatitis. The most common chronic bloodborne disease in the United States, HCV is also the leading reason for liver transplantation. Hepatitis C is transmitted the same way as HBV, that is, through blood and body fluid exposure.

In the United States, HCV is responsible for about 30% of cases of acute viral hepatitis, 75% to 85% of chronic hepatitis, and 10% to 20% of cirrhosis, end-stage liver disease, and liver cancer. An estimated 3.9 million Americans have been infected with HCV, 2.7 million of them chronically infected. An estimated 10,000 Americans die each year of HCV and its complications, and that number is expected to triple in the next 3 decades as the infection progresses in people who've been asymptomatic.

Needle sharing among IV drug users, as well as needle- or sharp sticks in medical settings, are common causes of transmission of HCV. An estimated 2,000 health care workers are infected, annually, with HCV from needle-stick or sharps injuries. There is a risk of contracting HCV for anyone on hemodialysis. Additionally, inadequate cleaning and decontamination of equipment that penetrates the skin, such as tattooing, body piercing and manicures, can also transmit the infection, increasing the risk for the general population.



Woman with liver cancer due to Hepatitis

HCV mutates rapidly and hinders the body's attempts to develop an effective antibody response. HCV has six genotypes and more than 50 subtypes. Genotype 1, the least responsive to therapy, is the most common strain in the United States. Because of HCV's ability to outsmart the human immune system, no vaccine is presently available and existing treatments don't always produce long-term improvement. Additionally, a person can be infected with multiple variations of HCV, with each variation responding differently to treatment.

Because 80% of those infected with HCV have no symptoms, HCV is often difficult to diagnose. Those who develop symptoms may not do so for years after infection. When signs and symptoms occur, they include jaundice, fatigue, dark urine, abdominal pain, loss of appetite, and nausea. Blood tests are the key to diagnosis. Anti-HCV antigen, which indicates HCV infection, can show up as soon as 4 weeks after infection. However, it may take a year for levels to become adequate to be detected. Serum HCV-RNA or RT-PCR (reverse transcriptase-polymerase chain reaction), which is used to quantify messenger RNA from serum RNA samples, may be detected in 1 to 2 weeks after infection occurs.

*Those positive for hepatitis should not donate blood, organs, or tissue. Affected persons should also avoid taking drugs that affect the liver, such as high-dose acetaminophen (Tylenol) and alcohol.*

*Approximately 700,000 needlestick injuries occur each year, putting healthcare providers, including nurses, physicians, lab workers and housekeepers, at risk of contracting hepatitis, specifically types B and C. Avoid recapping needles and promptly dispose of used needles in appropriate sharps disposal containers. Report all needlestick and sharps-related injuries promptly to ensure appropriate follow-up care.*

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